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Can we negotiate? Trust and the rule of law in the smart city paradigm

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ABSTRACT

This article focuses on the smart city as a political place. It analyses how both the technologies and the ideas smart cities are built on, oust trust and the rule of law as two important conditions for the city as a thriving political community. In particular, three challenges to the city as a political place are identified: de-subjection, invisibility, and a neo-liberal value shift. In order to address these challenges, we introduce the term ‘negotiation’ as a new guiding principle to the use of smart technologies in cities. Through negotiation, we underline some necessary steps to re-subjectify citizens and to put the acceptance of vulnerability and transparency at the centre of our thinking and evaluation of the smart city. This article concludes that the current focus on participation and citizen-centric smart city projects is not sufficient to build and contribute to a genuine political community and that a re-evaluation of active citizenship in the smart city context is therefore needed.

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1. Introduction

What happens to the city when a new technology develops? A city, in the simplest terms, is a ‘human settlement in which strangers are likely to meet’ (Sennett 1977, 39). In that sense, cities are political communities: they are composed of different individuals and groups who have to organise life in a shared space. Since cities are densely populated, these social relationships between strangers are particularly concentrated but also subject to more diversity. People living in cities experience juxtaposition constantly: they live in their homes, within their intimacy and families, whilst at the same time being confronted with otherness and novelty as soon as they walk on the street or take the subway. The contrast between the familiar, knowable nature of one’s private sphere and the strange, unknowable public space lies at the centre of the inherent complexity of urban politics.

By creating this ‘being together of strangers’ (Young 1990, 264), cities create a context in which conflicts arise and norms emerge. The collective regulation of social interactions and political relationships in the city has to juggle with respecting and regulating this diversity. Moreover, these social interactions are mediated by technologies and

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infrastructure. These technologies are no neutral service hatches: they have an impact on the way in which social interactions take shape. Consequently, whenever the technological infrastructure that these relationships operate in changes, new forms of being together as strangers emerge. With the arrival of the 'smart' city¹, we see such a change occurring.

We propose to look at how the 'smart' city impacts the city as a political community through the lens of trust. In section 2 we will first contrast the city as a *political place* with the city as a *technological place*, in order to identify three important challenges smart cities currently face as a political community under section 3: *de-subjectivation*, *invisibility* and a *neo-liberal value shift*. In section 4, we introduce *negotiation* as a guiding principle to develop smart cities in which urban conflict is not merely regulated through control but where trust and the rule of law enable the city to reclaim its political role as a community. Drawing from legal scholarship, urban science, political science and philosophical anthropology, this article will delve into what the smart city paradigm entails for the community of citizens. Whilst our analysis will not be exhaustive, we aim at contributing to the existing body of work with the original perspective of trust to interrogate what the smart city means for the citizens that share it.

2. When cities become smart

Given that it is impossible to give an all-encompassing definition of the city, we choose to look at it as a setting that concentrates social relationships between individuals as well as between individuals and (governmental) organisations, whilst mediating these relationships through (technological) infrastructure of which the smart city is the latest development. In this context, trust plays an important role as a strategy to handle the complexity and mediation of these relationships. With these considerations in mind, this article focuses on cities as *places of politics* (2.1) and *places of technology* (2.2).

2.1. Cities as places of politics

We will look at three fundamental questions about the political nature of the city: what fosters relationships within this togetherness of strangers? Who gets to participate in the political community it creates? How are the conflicts within it regulated? We address them by looking at *trust* (2.1.1), *participation* (2.1.2) and *conflict regulation* (2.1.3).

2.1.1. Trust in the city as a political place

As inherently social beings, human beings need to find ways to cooperate with others (Simpson 2012). In the city, people are living and collaborating with others who have different views, needs, beliefs and interests. This is far from self-evident: for instance, some interests don't necessarily align with the interests of those from whom they need support. Cities rely deeply on the ability to share space with strangers who might be very different but can agree to share certain political values and norms. More concretely, to be able to put key democratic values into practice such as autonomy, privacy or freedom, people depend to a great extent on others to respect those values as well. Human life is first and foremost an *intersubjective life*, where we are constantly shaping and co-shaping each other's existence (Hildebrandt 2015, 183). But which strategies can human beings develop in order to cope with the uncertainty brought forth by a complex environment inhabited by unpredictable others?

German sociologist Luhmann (1979) sees in trust a strategy to reduce such complexity. When we trust others, we act *as if* we are sure what the future will bring. We stop looking for additional evidence or safeguards and assume that we know how others think and will behave. We leave things open while simultaneously assuming that a single, positive future will become reality. We believe that others have positive intentions towards us and that they will look out for our personal interests (Möllering 2001, 2006; Simon 2013). When we put trust in others, we don't ignore or deny our own vulnerability but we rather chose to not let it keep us from pursuing relationships with others (Baier 1986). In that sense, trust can be characterised as a *functional fiction* (Keymolen 2016a). It is a fiction, because we act as if we are sure while we actually are not. Simultaneously, it has an important function: it makes social life possible. When we trust, we set aside possible bad outcomes and act instead, enabling us to create social ties. In this regard, trust serves as a fiction that allows the city to function as what it is: a togetherness of strangers where, despite unavoidable uncertainty, a vulnerable social life is made possible.

When we act based on trust, we accept the vulnerability that is at the heart of our interpersonal relations. Others might hurt us, both physically and psychologically, but we believe that this vulnerability will not be taken advantage of. In a relation of trust, one takes into account the interests of others, which inherently means one will, at least to oneself, make explicit what one's own interests are and how these relate to the interests of the trustor. When people are in a trust relation, there is room for an iterative, intersubjective process of giving meaning to everyday life interactions. In the context of the city, strangers live together and depend upon each other in their daily shared space with little certainty about how others will behave. Trust acknowledges the inherent distance between strangers and, simultaneously, their interdependency and vulnerability. It can serve as a strategy to act and to create social ties despite uncertainty. Because it enables social relationships, leaves room for intersubjective creation of meaning, and overcomes the intrinsic distance between strangers, trust is therefore useful to the city as a political community.

2.1.2. Political participation in the city

If the city is understood as a political community, participation to this community becomes immediately relevant. The issue of participation in the city can be illustrated historically, by looking at ancient city-states, as well as more recently through calls for a 'right to the city' (Lefebvre 1968) in response to an increasingly urbanised world.

Historically, the Athenian city-state (the *polis*) is considered to be the birthplace of citizenship as understood in the Western world. The *polis* embedded civic participation in its laws, constitution and institutions as a central foundation. Citizenship was understood as a powerful political and legal tool because it brought the city together as a political community (Riesenberg 1994) and allowed citizens to have a say in affairs the city in return. Citizens were simultaneously a diverse and an exclusive group: only a small minority of people were granted citizenship, excluding women, slaves or male prostitutes for instance (Halperin 1990), but citizenship policies were also designed to overrule other traditional bonds such as families, in order to tie citizens from different areas together in tribes (Manville 1990).

At the same time, being part of the *polis* was an important part of a citizen's life. *Politeia*, the Greek term for both citizenship and political structure, encompassed what we would

today distinguish as two views of citizenship (ibid). On the one hand, a passive view of citizenship limited to a legal status with rights and duties. On the other hand, a more active view of citizens as involved members of a community who contribute to its governance and its defence. The *polis*, then, was defined by its citizens, and being a citizen was defined by sharing the polis (ibid).

Even now that the scale of citizenship has shifted to nation-states, cities remain an important space for politics. With half of the world's population living in urban settings (United Nations Department of Economic and Social Affairs 2018), Robert Park observed that 'if the city is the world which man created, it is the world in which he is henceforth condemned to live' (Park 1967, 3). Calls for a 'right to the city' (Lefebvre 1968) put forward that if people are more and more inevitably shaped by the city as an environment, they should have the fundamental right to shape the city in return. The right to the city is a (re)appropriation by citizens of the environment in which they live. It goes beyond an individual right to access resources or public services, beyond a form of what we described as passive citizenship. On the contrary, it is centred around the city as a political community where active citizens can organise and govern the urban commons they create every day (Harvey 2003). The right to the city recognises the political nature of the city as a place build not despite but through urban struggles and conflicts (Margier and Melgaço 2016).

2.1.3. Conflict regulation in the city

When we use the term *conflict*, we refer to the essential decisions that have to be made within urban environments. These decisions are of conflictual nature because they concern limited resources, whether material (e.g. energy distribution, public services), normative (e.g. rules applicable to public spaces) or functional (e.g. power relations, enforcement of applicable rules, right to participation). In this article, conflict therefore does not have a negative undertone, nor does it imply physical violence. The term rather serves to recognise the ongoing process of the political life in the city, where diverging interests have to distribute limited resources and space whilst producing a common, shared world. Following this, it can be argued that the conflicts that shape and are shaped by cities directly stem from their distinctive feature as agglomerations of people and economic activity (Scott and Storper 2015). With urbanisation, cities become more densely populated which increases the pressure arising from these conflicts: resources may need to be shared more efficiently, more differing systems of norms may clash, power relations may become more unequal.

How urban conflicts are settled is beyond the scope of this article. However, we will pay attention to the values embodied by the way these conflicts are regulated. For instance, public services will be deployed differently if they aim for cost effectiveness or for universal access. Surveillance of public spaces will function differently if it prioritises privacy or maximisation of data collection. The set of values that guides how these conflicts are ultimately arbitrated, be it efficiency, control, inclusiveness or else, informs the politics of the city (on values in the city also see: Nagenborg 2018).

The rule of law is an example of such a set of values. It is relevant to conflict regulation because it requires the implementation of certain processes, checks and balances, and accountability mechanisms which impact how decisions are made in order to uphold certain values. While there is not one all-encompassing definition of the rule of law, there are some key notions (thin definition) which generally are at the heart of most

rule of law perspectives (Tamanaha 2007). Ideally put, the rule of law means all members of a society (both the people and the governing powers) are bound by the law. From this core idea emerge contested interpretations that bring forth different additional values. For instance, one of the rule of law's main problems is the paradox highlighted by Hobbes: a sovereign who is bound only by his own rules is not truly bound (Hobbes 2002, 198). To solve this paradox, additional notions such as the separation of powers, the existence of checks and balances, and the guarantee of democratic control have been implemented. Other values that can be attached to the rule of law are accessibility and predictability of the law, accountability and transparency of governing bodies, as well as due process, compliance with a hierarchy of norms and the right to a fair trial in front of an independent judicial body. Wider definitions of the rule of law also include democratic values, respect and protection of fundamental human rights, and good faith exercise of power (Bingham 2011). Within the scope of this article, we do not aim to select and uphold one single definition of the rule of law. Rather, we use the values that can be derived from these various definitions as examples of how values impact decision-making. Upholding any of these values changes the way urban conflicts are settled because it requires to implement them in the decision-making process. For instance, if democratic control is upheld as a core value in conflict regulation, it could lead to involving citizens at different moments of the decision-making process. If transparency is upheld as a core value, citizens could be granted a right to access all the information that guides decision making. The level of transparency or of democratic control required can influence the length, nature and outcome of conflict regulation.

As urban conflicts evolve in a time of datafication (Hildebrandt 2013), massive urbanisation, and rising environmental pressure, it is especially relevant to look at the values that guide the way they are solved. This context has led to the emergence of paradigms such as the 'smart' city. When analysing this paradigm and what it says about the role of technology in the city, it is important to ask which urban conflicts it proposes to solve and which values it embeds in its solutions.

2.2. Cities as places of technology

After analysing the city as a place of politics, this section will focus on the city as a place of technology by looking at the paradigm of the smart city. Of course, the role of technology in cities and city governance is neither new nor exclusive to smart cities. Technology, whether it is deployed by local government, businesses or citizens, is used in cities to process information, govern shared resources, develop infrastructure and manage a form of collective cohesion. Moreover, information has always been an important condition tool for governance because it makes visible, it enables government to 'see' (Scott 1998; Torpey 2000).

In order to recognise this continuum of technological development and the difficulty of pinning down a universal definition of the smart city, we will discuss this paradigm in two parts. First, just as we established the political nature of the city, we address the technological nature of the city by looking at the technologies smart cities are made of. Second, echoing our observations on the role trust and of values in conflict regulation, we look at the values embedded in the smart city. In short, we address the technologies smart cities are made of and the ideas smart cities are built on. This leads us to consider the smart city

first through a *technological frame* (2.2.1) before we look into the relation of *trust and technology* (2.2.2) and move to a *rhetorical frame* (2.2.3).

2.2.1. Technological frame

Technological infrastructure impacts the city it builds. Historically, urban areas have evolved most dramatically during technological revolutions, of which the current ICT developments are considered to be the fourth. Relying on the newest ICTs, smart cities are deployed as an ‘urban strategy that seeks advanced technological solutions to the pressing issues facing policy makers today’ (Viitanen and Kingston 2014, 1). They rely on the following developments (Kitchin 2014, 2016):

- data gathering through sensors, connected objects (IoT), interfaces, travelling cards, smart metres, mobile apps, implants, cameras, e-government systems, polls, online platforms and more; this data is able to be streamed and stored through high speed communications networks and high capacity storage infrastructure (Edwards 2016);
- data analysis through data analytics (big data), database crossing, centralised urban dashboards, statistical analysis, simulations, modelling etc.;
- data usage through feedback loops, algorithmic decision-making, automated infrastructure, predictive policing, etc.

These technologies aim to ‘anticipate future needs and concerns, plan strategically, avoid loss, and manage risk’ (Kerr and Earle 2013, 66). In that sense, data-driven technologies can also be seen as a strategy to manage complexity. The automated analysis of large data sets allows correlations and patterns to be established in order to formulate predictions and make the future more controllable. Whereas trust enables us to accept vulnerability, data-driven technologies hold the promise of diminishing vulnerability through mining as much data as possible (Keymolen 2016b).

Indeed, one of the most identifiable characteristics of the smart city is its reliance on *datafication*. Datafication can be understood as the creation of value from data that is extracted and abstracted from reality (Mayer-Schönberger and Cukier 2013). Daily urban life is full of so-called digital footprints which make it possible to analyse certain behaviours (e.g. work transit, shopping habits, disorder in public spaces, waste disposal, use of public services) through many different, networked data collection points (e.g. respectively public transport cards and licence plate recognition, smartphone apps and loyalty cards, CCTV and facial recognition, connected bins and unique garbage cards, unique identifiers and database cross-referencing). The aforementioned technologies make it unprecedentedly easy to capture, store, transmit and analyse data (Kitchin 2016). Technologies such as sensors and IoT applications are designed to collect information through data points and aggregate them in large sets that can be analysed more or less automatically. Datafication is not merely made *possible* by these technologies: it is *essential* to the way they work. By relying on these technologies, the smart city bases its reality on data and turns that data back into its reality.

2.2.2. Trust in the smart city

Given the importance of technology in the smart city, we propose to examine its impact on trust. Whereas trust is generally located on the interpersonal level (see section 2.1.1), in

modern life and even more specifically in the smart city, interpersonal trust increasingly has to share the stage with *trust in systems* or *system trust*. Several scholars distinguish between trust in pre-modern times and trust in (late) modern times where large, opaque, and technology-driven systems such as the banking system, public transport, and international companies increasingly play a role in everyday life (Giddens 1991; Luhmann 1979; Seligman 1997). The smart city is therefore not just a 'being together of strangers', but also a 'being together of strangers and systems'. It is not just about trust between citizens, but also about trust in the technologies used to build and operate the city.

The importance of system trust, and more specifically of trust in technology as a system, raises a number of questions. Whereas trust between persons is often based on elements such as reputation, shared friends, social roles, and past experiences, in order to characterise trust in technology, we have to ask ourselves: trust in technology *to do what*? As Pitt (2010) points out, trust in technology as such is too broad an enquiry, and a misleading one: it requires context.

First, whether or not we trust a technology greatly depends on our perception of the functionality of that technology. We, for example, expect that the subway takes us from a to b, or that the ATM provides us with money. Trust in systems is closely connected to our belief in the ability of these systems to fulfil their tasks and our distrust largely impacted by our frustration when they malfunction (Davis 1985, 1993). When looking at smart city technologies, we need to ask ourselves what aim we trust they will fulfil – a question made harder to answer by the nebulous nature of 'smartness' as a label (Sadowski and Pasquale 2015).

Second, as we are not able to scrutinise the system ourselves – because we lack access, time, and most importantly expertise – we trust that others, who do have the proper expertise and discretion, check these systems on our behalf (Luhmann 1979). In other words, trust in systems is not merely trust in the technology and processes but also in the people in charge of these systems. When applied to the smart city, this means that trusting a certain technology (e.g. drivers using an app to monitor traffic and chose the fastest route) entails trusting that using it is safe and that it is deployed responsibly (e.g. the app respects data privacy and security) among others because it has gone through trustworthy processes (e.g. the app would not be promoted by the city if it wasn't safe, app stores have vetting processes, legal norms in place ensure data privacy assessments). When we question the role of trust in the smart city, we have to ask whether these processes are sufficiently robust and trustworthy. Therefore it is important to note that trust and trustworthiness are interconnected yet two different things (also see: Hardin 2006). Trust is an action; it is about having positive expectations of the actions of other people or of specific technologies or applications. Trustworthiness refers to the degree in which the person's or artefact's (trustees) intentions and actions align with the positive expectations of the trustor. Consequently, it might well be that a citizen trusts a technology because it appears to be trustworthy, while actually it is not. A trustworthy appearance might cover up malpractice taking place behind the interface. As long as this malpractice remains out of sight from citizens, their trusting relation may remain intact, whether or not this trusting attitude is actually justified. As there is a clear trend to 'design for trust' (Nickel 2015), it is to be expected that this problem of

discrepancy between trustworthy appearance and trustworthy action will only grow over time.

Third, not only the people operating and controlling the system behind the scenes are part of system trust: the people representing the systems in everyday life also play an important role. Giddens (1990) refers to these representatives as *facework commitments* who mediate the trust of the individuals in the system. They are, so to say, the human face of the system they are part of: employees of the subway company who help people check-in, or the receptionist at the bank who welcomes customers, for example. Within the smart city paradigm, the role of these human access points is generally minimised. We can ask ourselves how this impacts trust.

Finally, trust in technological applications is often based on the – implicit – assumption that if others do it too, it cannot be bad. Trust in a certain technology is therefore strongly tied to its relationship with the social fabric at large. Given that technology has become a necessary condition for people to fulfil their social roles, trust in the system becomes almost inescapable. In the context of the smart city, it is hard to not follow the behaviour moulded by the social fabric when that would require to stop being part of the city. On one hand, this is difficult because increasingly large parts of inadvertent daily life are datafied, and one cannot stop ‘living’ at random moments of the day. On the other hand, the only way to behave differently from others, to opt out, would be to move out of the city.

Similar to interpersonal trust (see section 2.1.1), system trust can be defined as a strategy to deal with complexity. In the former case, complexity is brought forth by the unpredicted action of others whom we are depending on. In the second case, complexity is brought forth by the opaque systems we are depending on in modern life. Besides, interpersonal trust and system trust don’t operate in a vacuum. To deal with a complex environment, several other strategies can be employed, oftentimes functioning interdependently. For example, social norms and values pre-sort – often implicitly – our actions and make the behaviour of others more predictable. A legal framework sets the boundaries within which interactions take place. A contract may reduce complexity as it lists the actions and duties of the parties involved. Finally, different control mechanisms are developed to minimise risk and uncertainty. Oftentimes these control mechanisms are built into technologies (van den Berg and Keymolen 2017).

We have discussed how the smart city shifts a significant part of the focus of trust from interpersonal relationships towards systems, which brings up a number of important issues: the aim of smart city technologies, the processes behind them and the role of interpersonal trust within a system. Trust in technology without a context is meaningless: without looking at what the smart city paradigm *means*, beyond its concrete (and uneven) realities, we cannot understand how it impacts trust and the city as a political community.

2.2.3. Rhetorical frame

When looking at what the smart city paradigm means, we first need to recognise that smart city projects are unevenly deployed, unequally efficient, and that they correspond to widely different realities. That said, they all have in common their reliance on technology as a tool to oversee, understand, and manipulate an environment (on techno-regulation see: Leenes 2011). Concrete practices might differ, but the smart city paradigm

also reflects a particular, if nebulous, understanding of what cities are and how they work. We thus follow Krivý's argument that the 'truth-effects' of smartness are as important as its concrete realities (Krivý 2018). This section will therefore explore the smart city's rhetorical frame. Given our previous developments, we pay particular attention to the issues of political participation and conflict regulation. We describe the smart city's rhetorical framework as shaped by three interconnected aspects: *securitisation*, *citizen contribution*, and *privatisation*.

2.2.3.1. Securitisation. By approaching issues of participation and conflict as a technical puzzle which could be solved with the right technological, data-driven tools, smart city projects often include a dimension of *securitisation*. The importance of securitisation in the smart city is shown clearly when we look at one of the main political conflicts in urban environments, namely dealing with the complexity of living in a space shared with strangers. Different technologies are set into place to ensure public safety, some of which are already widely deployed: surveillance cameras, facial recognition, crowd control software, geolocation, and predictive policing for instance. These securitisation tools are implemented at different stages (see section 2.2.1): for data gathering with sensor and monitor technologies, for data analysis with threat modelling and predictive policing, and for data usage through targeted interventions and responsive policing.

Coupled with the trend of datafication (see section 2.2.1), the dimension of securitisation runs deeper than the issue of safety in public spaces. The most revealing example is predictive policing which relies on smart city technologies. According to a report from RAND (Perry et al. 2013) in the case of predicting crimes, law enforcement can use a combination of data data (e.g. historical crime reports, 911 calls, economic factors etc) to map crime and predict risks through predictive analysis methods (risk terrain analysis, clustering models etc) in order to intervene. In order for these models to be developed, the reality of urban life has to be turned into data. One of the issues of applying data mining practices to risk analysis is that correlation and regression do not suffice to explain 'the factors behind the prediction' (Perry et al. 2013). Predictive policing embodies the smart city's ideal that some urban conflicts are predictable, and that with the correct knowledge (data), any outcome can be encouraged or prevented. Securitisation entails exhaustiveness (in data collection), optimisation (in data analysis) and control (in data use).

2.2.3.2. Citizen contribution. Over the past few years, smart cities have increasingly underlined the importance of citizen participation (de Waal and Dignum 2017). Often labelled 'citizen-centric', these smart cities promote themselves as democratic enablers for 'smart citizens'. Overall, citizen participation is firstly focused on how citizens can *contribute* their knowledge to the understanding of urban problems by contributing data. Meanwhile, the process of solving these problems may remain inaccessible. Citizens' data can be actively volunteered, as has long been the case with VGI (volunteered-geographic information, see Tenney and Sieber 2016) on projects such as OpenStreetMaps and FixMyStreet (Berntzen and Johannessen 2016), where residents can contribute to mapping their environment and signal malfunctions to their municipality. It can also be captured, for instance through monitors that capture WiFi and Bluetooth signals from phones to measure how many people pass by on busy streets or enter certain shops (e.g. CityTraffic's products in the Netherlands). As such, current surveillance practices

can be characterised as ‘mobile and invisible’, depending ‘greatly on the involuntary participation of individuals’ (Lyon 2015). Schinkel (2008) refers to this practice as ‘selfveillance’.

In addition, participation is focused on how datafication allows citizens to interact with their environment differently, offering them more information, more control and more comfort. Citizens can either use this data completely freely through open data initiatives made by citizens (for examples of grassroots uses of open data, see Calzada 2018) or through a variety of platforms and applications that are developed for citizens to interact in and with the city. For instance, in the US, Pittsburgh’s ‘Burgh’s Eye View’ offers a responsive city map that displays datasets such as code violations, arrests and police charges. In Spain, SmartCityApp is deployed in municipalities to give citizens access to information (traffic, tourist guides, weather forecast ...) and city services (bus times, WiFi zones, parking spots ...). In France, 11 cities have implemented an app called Initiative Commune Connectée through which residents can get in touch with representatives and report everyday problems.

Citizen participation has also become part of the securitisation process. Through smartphone applications that allow citizens to notify the municipality or the police when they notice suspicious activities or maintenance issues, citizens become themselves partly responsible for the security. In the securitisation frame, participation is intertwined with ‘responsibilisation’ (Garland 2001): security becomes partly delegated to the citizen (on security and trust also see: van den Berg and Keymolen 2017). The affordances of smart ICT applications transform citizens into ‘deputy sheriffs’, the eyes and ears of the municipality and police (Lahav and Guiraudon 2000; Torpey 2000). For example, the Israeli app Reporty allows people to make direct video calls with the police to report ‘severe incivilities and critical situations’ (tags, floods, robbery, assault ...) (Legros 2018). Initially implemented in the French city Nice and defended by its mayor for protecting residents and making the city safer, it was later halted by the French Data Protection Authority for violating data privacy laws.

2.2.3.3. Privatisation. Both the way securitisation and citizen contribution work in the smart city paradigm cannot be fully understood without considering *privatisation* as a main driver of smart city projects today. Large multinational companies such as IBM (see: Paroutis, Bennett, and Heracleous 2014). Cisco, Siemens or Alphabet have been focusing on smart cities for a decade, funding many projects around the world (e.g. Cisco and New Songdo City, see: Hollands 2015). On top of urban infrastructure, multinationals also invest massively in services by their important role in the ‘sharing economy’ as is the case of Airbnb for housing, Uber for transport, and Waze for traffic management.

Besides large multinational companies, municipalities rely on public-private partnerships (PPPs) to make their cities ‘smart’ (e.g. CityTec and Mobidot in the Netherlands). Following the longer trend of IT outsourcing by local government (see: Cox, Roberts, and Walton 2011) and privatisation of urban infrastructures (see: Koppenjan and Enserink 2009), defenders of PPPs underline how they use expert knowledge to yield better results at a lower cost. Through pilot projects funded by PPPs, private companies can co-shape and even steer urban policies by giving priority to problems that they deem both solvable and marketable. A focus on technologically solvable problems means public policy may be steered towards problems that can be measured through sensors and solved through mathematical models. A focus on marketable problems orients

public policy towards attractiveness and competition, turning ‘smartness’ into a competitive index (Edwards 2016) which markets cities in order to attract investment and job creation. Additionally, PPPs are themselves competitive in nature since funding opportunities depend on large funds, such as the European Union’s *Horizon 2020*, or challenges, such as Barcelona’s ‘Open Challenge’ or ‘Apps for Amsterdam’.

3. When the political and the technological meet in the smart city

In our previous sections, we have highlighted the importance of participation and of conflict regulation in the city as a political place, as well as the specificities of the smart city paradigm when it comes to the city as a technological place. Following these considerations, we will now argue that the smart city paradigm affects the fundamental parts of the city as a political place. To that end, we have identified three core effects of the smart city paradigm on participation and conflict regulation: *de-subjectivation* (3.1), *invisibility* (3.2) and a *neo-liberal value shift* (3.3).

3.1. De-subjectivation

The first political challenge of the smart city is how it affects citizens’ participation to the city as a political community (for an in-depth analysis of smart citizen participation, see Cardullo and Kitchin 2018). We saw that the smart city paradigm frames participation first and foremost around data (see section 2.2.3). Through data-driven applications, smart citizens can dialogue with representatives, gain and share knowledge about their environment, give feedback on public services, and participate to public safety. Paradoxically, we argue that this rhetorical framework actually turns citizens into *objects of control* (3.1.1) instead of the *subjects of urban politics* (3.1.2).

3.1.1. From participants to objects of control

When looking at ‘citizen-centric’ innovations, we see a trend towards the individualisation of participation by the systemisation of solutions. On an individual basis, citizens can participate by contributing data to the smart city system that was chosen as the solution to urban conflicts. By limiting participation to contributing data, citizens become the *object* of the strategies developed by smart city technologies, which puts them under *control* of the system formed by these technologies. They are seen as ‘incidental to the data flows’, rather than ‘living parts of the city’s operations’ (Taylor et al. 2016, 5).

For instance, when citizens are made responsible for public safety, we see that security becomes individualised in the sense that each citizen can ‘participate’ by deciding what counts as a suspicious situation. This call to action is directed to the individual, on their own personal mobile device (e.g. smart phone, smart watch, tablet, ...). For example, Camden’s Eye in the Sky network allows neighbours to watch their neighbourhood through mounted surveillance cameras and to call the police if they see suspicious activity (Wiig 2018). The system is specifically designed to make this communication invisible, so that a concerned resident only interacts with a ‘technician’ (who in turns contacts the police) without being seen interacting with the police (ibid). This disappearance of ‘face-work commitments’ – the people who represent systems (see section 2.2.2) – is characteristic of smart cities. No human interface intervenes in the interactions as the systems

themselves are tailored – even personalised – to the preferences and needs of each individual. The disappearance of the facework commitments makes system trust more radical in nature. Ultimately, the technological system is put in control of conflict resolution and de-incentivises other forms of engagement.

From the perspective of trust, this is a shift towards control-based strategies with decreasing interpersonal trust. Citizens' actions and judgments are not directed towards their fellow citizens but to smart city technologies. Regulating the public space becomes a technical problem (e.g. a residents calls on a 'technician'), an issue of optimising parameters based on collected data-sets and implementing solutions to mitigate these outcomes. It is important to note how control-based strategies and trust-based strategies differ. Whereas control-based strategies are focussed on reducing uncertainty and minimising risk, trust-based strategies enable people to endure uncertainty and risk. Whereas control-based strategies rely on exhaustive knowledge of the present and prediction – even prevention – of the future, trust means acting *despite* a lack of information, through the functional fiction of a good outcome (on prevention and risk-aversion see: Beck 1992a, 1992b). As a result, the process and outcome in trust-based interactions is generally more open than in control-based interactions; in control-based interactions, the outcome is more certain, at the price of less freedom to choose and act.

This leaves us with the paradoxical situation that data-participation through these technologies, meant to empower citizens, actually outsources active citizenship to the smart city technology and the actors behind it. Consequently, securitisation through datafication is at risk of asserting the framing of cities as mathematical problems to be solved and optimised, whilst making cities less open to political interaction and debate.

3.1.2. Towards a de-subjectified smart citizen

Besides the shift towards control, the objectivation of citizens as data points also leads to their *de-subjectivation*. In this article, we use de-subjectivation to describe that if citizens are objects to be observed, analysed and controlled, they are no longer considered as individual, political *subjects* able to participate actively in their community. When data-participation turns citizens into data points, people start being represented by their data doubles instead of by themselves. The focus on efficiency and effectiveness further excludes the complex and multi-faceted nature of active citizen participation, denying room for challenge and resistance (on efficiency and effectiveness in government processes, see: Prins et al. 2011). By favouring passive participation (see section 2.2.3), even 'citizen-centric' smart cities rely on citizens as information gatherers whose ability to actively co-shape the city is conditioned by datafication. This entails a de-subjectivation both of citizens and of their behaviour.

The de-subjectivation of *citizens* means citizens are denied their autonomy, their ability to participate as political beings capable of challenging the context and methods in which information is collected and decisions are made. In the smart city paradigm, political participation does not leave room to challenge the rhetorical framework of smartness itself. Even applications that are aimed at participation (e.g. polls) focus on consultation in order to measure opinions as figures, as data to be processed. Participation is limited to a dataset that shows which public policies can or cannot be accepted (Michel 2006). These tools still rely on data as a 'given', as the resource to be extracted through the act of participating. In that sense, participation becomes a mechanism through which

data is ‘pulled’ from citizens (ibid) who are sources of information rather than political beings.

The de-subjection of citizens’ *behaviour* refers to the effect of control-based strategies and surveillance practices (see 3.1.1.). If data doubles become a substitute for citizens, data comes to define the relationship between not only citizens and themselves (e.g. the ‘quantified self’), but also between citizens and others, which has two implications. Firstly, individual and collective behaviour is understood by the smart city as a pattern to measure, optimise and nudge. Secondly, citizens are turned into sensors of each other’s behaviour (on ‘co-veillance’, see Mann 2004). In both regards, citizens’ behaviour is objectified and the relationship between citizens is instrumentalised as a form of measurement and control. Meanwhile, the political activity of regulating urban conflicts and creating community out of diversity is delegated to technological systems. In that sense, the smart city paradigm does not frame citizens as active subjects in charge of their community through their behaviour towards others, but as objects to steer and sensors to use. To oversimplify, a city where surveillance is the main relationship building and governing a political community, and where control-based optimisation is the main strategy for conflict regulation, is a different city than one where inherent urban uncertainty is met with trust and conflicts are regulated through active participation in the public realm.

3.2. *Invisibility*

A second challenge for the smart city is that despite gathering more information than ever before, it also comes with forms of *invisible invisibility* linked to privatisation (3.2.1) which affects the ability for citizens to *trust technology* (3.2.2).

3.2.1. *Invisible visibility*

Through datafication, citizens increasingly become visible in a, to them, invisible way, also referred to as ‘*invisible visibility*’ (Keymolen 2016a). This invisible visibility limits the possibility to develop trust relations and consequently weakens the city as place of politics in three important ways.

Firstly, citizens are not aware of *how* they become visible and therefore are not aware of what is at stake for them (also see: Kiran and Verbeek 2010). Dutch research indicates that citizens in general are not familiar with the fact that sensors in the city are gathering data on their behaviour (Heezen, Louwerse, and Riedstra 2018). Moreover, contracts on smart city projects can be open-ended in character, without clear boundaries and agreements on the use and ownership of the data. Secondly, citizens are not aware to *whom* they become visible. As smart city developments are powered by PPPs, important questions arise: who owns the data (the company delivering the systems, the municipality, the citizens)? Who can re-use it, and how? Who can access it? How is it protected? Which third-parties are involved, and when? How do these smart city innovations address legal requirements such as data protection laws?

Thirdly, whereas citizens become increasingly visible, the smart city system itself becomes increasingly *invisible*. This is not merely related to the sensors that are seamlessly imbedded in the environment, but also to the fact that a clear feedback loop between the gathering of data and the output of the smart city systems is often lacking. The flow of data

is invisible and its uses are complex. For city authorities, data analysis can be a basis for decision-making (e.g. whether to patrol certain areas, whether to insert a no-tolerance zone for alcohol etc). However, data is not merely useful 'in real-time' but also as input for the general policy-decision making process and as a measuring stick to check targets and monitor progress. For the private actors involved, this data can be used for other purposes than the initial application: partnerships, advertisement, marketing, product development etc. Between these parties, contracts and applicable rules create a wide variety of uses. All in all, this patchwork of uses and actors makes it rather difficult for citizens to know how these systems actually impact everyday life.

3.2.2. *Trust in technology*

As a consequence of the trust shift developed previously (see section 2.2.2), the smart city as a 'coming together of strangers and systems' is characterised by a power imbalance: citizens have to put their trust in smart city technology as a system. However, Kiran and Verbeek (2010) suggest that there are two specific conditions that have to be met in order for human beings to 'trust themselves to technology'.

First, the technology in question needs to leave room to develop an explicit relation to its mediating role, rather than being dominating and overpowering. And second, human beings need to have the ability to 'read' the mediating roles of the technology, and the skills to 'appropriate' it in specific ways. (Kiran and Verbeek 2010, 424)

Due to the threefold invisible visibility of citizens, both conditions are not met in the smart city context: the 'black box' of data streams and the invisibility of their impact on the city hinders citizens in 'reading' the technologies or 'appropriating' it in a meaningful way. They cannot explicitly engage with the mediating role of technology to understand and challenge it. Besides, in order for citizens to engage in the city as a place of politics, they need to be aware that they are part of a situation where something is at stake. Yet the vulnerabilities associated with data gathering (e.g. loss of privacy and freedom, declining autonomy etc) remain implicit and almost never become the subject of a wide political debate. Moreover, the tight intertwinement of public and private actors makes it even more difficult to engage in a debate as it is unclear who citizens should actually be talking to and who can be held accountable for what.

3.3. *Value shift*

A third challenge is the shift in values that guide conflict regulation. We established that sets of values such as the rule of law are important to the way urban conflicts are resolved (see section 2.1.3). In the smart city paradigm, we observe a shift towards *neo-liberal values* (3.3.1) and away from *rule of law values* (3.3.2.).

3.3.1. *Neo-liberal values in the smart city*

We described the smart city paradigm as strongly defined by privatisation (see section 2.2.3) which raises the issue of misalignment of public values and private interests (see for instance Viitanen and Kingston 2014). This shift and its limits have long been well documented in the context of privatisation, which puts values of efficiency, competition, cost-effectiveness and customer satisfaction at the forefront over other legitimate concerns such as social justice, non-discrimination, equity and universal service. Privatisation of

the city through technology (Ranchordás 2018) runs the risk of having the market led by private interests (Niaros 2015) shape large parts of the political nature of the city. As Nagenborg (2018) has rightfully noted, when technologies come in to play, we tend to forget to ask the fundamental question of which kind of city we want to create and live in.

The effects of neo-liberalism on urban science and urban policies has for instance been discussed in literature under the term neo-liberal urbanism, which refers to the ‘subordination of place and territory to speculative strategies of profit-making at the expense of use values, social needs and public goods’ (Peck, Theodore, and Brenner 2013). In this article, we will merely underline that the smart city promotes a pragmatic, instrumental vision of the city. In this city, the citizen becomes a consumer (see: Ranchordás 2018) whose rights are defined by freedom of choice and aimed towards customer satisfaction (Cardullo and Kitchen 2018) even when the latter implies less freedom of choice through nudging techniques (on nudging and smart governmentality, see Vanolo 2014). In terms of conflict regulation, this neo-liberal vision of the city means that urban conflicts will be regulated top-down, from an expert technocratic perspective, and based on market-values.

3.3.2. Rule of law in the smart city

This value shift thus moves conflict regulation away from the rule of law as presented previously (see section 2.1.3.). Decision making in the privatised smart city is at danger of being unclear, inaccessible and non-democratic without clear accountability, independent checks and balances or due process for citizens. The contracts that form private-public partnerships are often non-transparent, not public or unintelligible. The Canadian project Sidewalk Labs in Toronto offers a good example of these difficulties.

Followed closely by researcher Bianca Wylie², this project is led by Alphabet subsidiary Sidewalk Labs to implement a smart city in the Quayside site in Toronto. The partnership was established after a competition organised by Waterfront Toronto, itself a partnership between different bodies of the Canadian government. Locals have emitted concerns about data protection, use, security, and privacy, as well as demanding more transparency on the 50 million USD budget. In response, public meetings were organised, which were criticised for coming late in the project, requiring registration and lacking information on fundamental aspects of the partnership (Haggart and Spicer 2018). An advisory panel was formed in April 2018 to include ethical concerns to the deployment of the project, but its meetings were closed to the media and the content protected by strict confidentiality agreements. A public consultation was announced, without binding force and clear structure (Haggart and Tusikov 2018), whilst lobbying efforts from Sidewalk Labs continued to be deployed across federal departments (Desmarais 2018). In October 2018, two experts resigned from the advisory panel. They criticised the lack of commitment to privacy by design (Canon 2018) as well as:

[the] apathy and utter lack of leadership regarding shaky public trust and social license ... [of] urgency and concern that has been raised in multiple fora – as evident through how the public meetings continue to be run, who is running the, and what is consistently left unsaid and unaddressed. (Muzaffar 2018)

In November 2018, it became clear that the project would not come under vote by the City Council, leaving Waterfront and Sidewalk as the only deciding parties (Wylie 2018). Values

of transparency, accountability, checks and balances, democratic control, and human rights such as privacy were therefore tampered with.

4. Negotiating the smart city

By way of conclusion, an attempt will be made to propose the contours of a strategy that enables the smart city to respond to the challenges described above. We designate this strategy by the term *negotiation*. It resembles to some extent the meaning it has in Science and Technology Studies (STS) where it refers to the interactions taking place between different social relevant groups in shaping and attaching meaning to a certain artefact or practice (Bijker 1995). However, where in STS the term is analytic/descriptive in nature, we use it in a normative/prescriptive way. We define *negotiation* as the ability of the city as a political community made of citizens to regulate urban conflicts. In the context of this article, it serves as a guiding principle for the city to reclaim itself as a place of politics where the inherent uncertainty of urban life is not dominantly regulated by control.

As a guiding principle, negotiation does not refer merely to the negotiations that are already taking place – for example between municipalities and companies – but to the ones that *should* be taking place, more specifically amongst citizens and between citizens and the municipality. We draw from our exploration of trust and the rule of law values to identify what makes negotiation possible, namely the following conditions: *re-subjectivation*, *transparency* and *vulnerability*.

4.1. Re-subjectivation

Firstly, *re-subjectivation* entails recognising citizens as subjects, as active members of a political community entitled to the capacity of negotiating the conflicts at stake. Just like interpersonal trust requires individuals to recognise each other as individuals, a political community has to recognise its members as subjects, not objects. Re-subjectivation asks for an active attitude of the municipality to not merely depend on data collection and contribution, but to look beyond the data doubles to find the community of citizens their smart city policies are affecting. Re-subjectivation moreover entails the acknowledgment that where citizens are affected in their core agency, they are capable of participating with their voice, or through their collective organisation to smart city developments. This kind of participation exceeds the current possibilities of citizen-centric initiatives (see section 3.1.3).

4.2. Transparency

Secondly, *transparency* entails making the processes at hand visible. Just as it is only possible for people to trust themselves to technology if its mediating role is explicit and readable, it is not possible to negotiate without knowing *what* one negotiates. Given the threefold invisible visibility citizens are faced (see section 3.2.1), transparency needs to apply on three levels: show the technology, show how it works, and show for whom it works. First steps have been made by promoting open software (e.g. Barcelona, Amsterdam) to make the code behind algorithms that regulate the city, from public services to

architecture, available and accessible to citizens. By opening the algorithmic ‘black box’, it becomes clearer *how* technology works. However, it is still necessary to make the data collection itself visible and to promote greater transparency regarding access to data.

4.3. Vulnerability

Thirdly, *vulnerability* entails recognising the interests and risks at stake. Vulnerability is a key element of trust: it simultaneously recognises there is something to lose and the possibility of loss. Vulnerability therefore implies two facets. In order to negotiate, the parties at hand need to understand each other’s interests. If they recognise what they have to lose and gain from the other party, they also recognise technology is not a neutral tool. Indeed, the aim of each smart city technology needs to be explicit in order to unpack the interests it promotes. The second facet is to embrace the inherent uncertainty of urban togetherness, the impossibility to measure and control all the parameters of city life, because the city is first and foremost a dynamic, complex, social and political community. This form of vulnerability gives citizens the right to solve conflicts outside of the technological solutions: it protects the right to imagine the city differently than through the smart city paradigm.

5. Conclusion

With the rise of smart cities, we have an opportunity to not only delve into what a modern city is made of but also to reflect upon what a modern city should be like. In this article, we looked at the city from two angles: as a place of politics and a place of technology. In the context of the city as a technological place, we found that the smart city paradigm diminishes its function as an intersubjective ‘being together of strangers’ where citizens confront and deal with diversity and unexpectedness. We examined how this impacted trust and the rule of law, two important conditions for a thriving city as a place of politics. Scrutinising both the technologies and ideas smart cities are built on, it becomes conspicuously clear that technology is not a neutral instrument or a simple vehicle of innovative public policies. On the contrary, we saw that securitisation, data-based participation, and public-private partnerships have a central role in shaping the smart city. Thus, these technologies reframe participation around data contribution and use, entrench the role of private stakeholders such as manufacturers and consultants in city governance, and embed values such as efficiency, optimisation and competition in public policy.

In particular, we saw that the building blocks of the smart city risk bringing forth a focus on control instead of trust to deal with the unpredictability and diversity of city life, replacing citizens with data doubles, and democratic values with market values. After analysing the political challenges of de-subjection, invisible visibility, and the neo-liberal value shift, we argued that negotiation should be a guiding principle to respond to these challenges. In order for negotiations to take place amongst citizens and between citizens and the municipality, certain conditions need to be met. We specifically looked into re-subjection, transparency, and vulnerability.

It goes without saying that more work needs to be done to answer the political challenges of the smart city, for instance by further developing negotiation as a guiding principle. Moreover, negotiation is certainly not meant to fix or neutralise the problematic

effects of smart city developments. However, giving negotiation an explicit place in the smart city paradigm might open up the much-needed room for the political nature of the city. It acknowledges citizens as important stakeholders who have the ability to co-shape their city within a context formed by trust and the rule of law. In order to provide such a context, it first of all has to become transparent what the technology actually is, how it works and for whom it works. Additionally, vulnerability should be at the centre of all negotiation processes, by being open about the interests and risks involved for all stakeholders.

The idea that negotiation should be possible throughout the whole life cycle of a smart city application, entails more meaningful participation and involvement of citizens than the current citizen-centred smart city initiatives provide for. It requires not just a new mind-set of municipality and private parties but a hard reset of one of the most fundamental elements of our modern *polis*: a re-evaluation of active citizenship in the smart city context.

Notes

1. The use of the term 'smart' with the associated paradigm of 'smartness' is widely discussed in literature and criticised, among others, for its inherent positive connotation stemming from the corporate marketing discourse that coined it, as well as for being both imprecise in theory and inaccurate in practice, lumping together disparate realities with different goals and implementations. However, for readability, this article will not use quotation marks around the term 'smart'.
2. Open-government advocate Bianca Wylie is following the development of Sidewalk Toronto closely and comments regularly through her Medium page, available at: <https://medium.com/@biancawylie>. She is a Senior Fellow at the Centre for International Governance Innovation and founder of Open Data Institute Toronto.

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